

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>IPD/P2265/WOL</b>	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. <b>PCT/ GB 96/ 00099</b>	International filing date ( <i>day/month/year</i> ) <b>19/01/1996</b>	Priority date ( <i>day/month/year</i> ) <b>20/01/1995</b>
International Patent Classification (IPC) or national classification and IPC <b>C12N15/53</b>		
Applicant <b>THE SECRETARY OF STATE FOR DEFENCE et al.</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consists of a total of \_\_\_\_\_ sheets.
3. This report contains indications and corresponding pages relating to the following items:
- I  Basis of the report
  - II  Priority
  - III  Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV  Lack of unity of invention
  - V  Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI  Certain documents cited
  - VII  Certain defects in the international application
  - VIII  Certain observations on the international application

Date of submission of the demand <b>14/08/1996</b>	Date of completion of this report <b>10 APR 1997</b>
Name and mailing address of the IPEA/  European Patent Office D-80298 Munich Tel. (+49-89) 2399-0, Tx: 523656 epmu d Fax: (+49-89) 2399-4465	Authorized officer  <b>E. Zellner</b> Telephone No. <b>8427</b>

**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

Intern. application No.

PCT/GB96/00099

**I. Basis of the report**

1. This report has been drawn up on the basis of (Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.):

[] the international application as originally filed.

[] the description, pages \_\_\_\_\_, as originally filed,  
pages \_\_\_\_\_, filed with the demand,  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_,

[] the claims, Nos. \_\_\_\_\_, as originally filed,  
Nos. \_\_\_\_\_, as amended under Article 19,  
Nos. \_\_\_\_\_, filed with the demand,  
Nos. \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
Nos. \_\_\_\_\_, filed with the letter of \_\_\_\_\_,

[] the drawings, sheets/fig \_\_\_\_\_, as originally filed,  
sheets/fig \_\_\_\_\_, filed with the demand,  
sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

2. The amendments have resulted in the cancellation of:

[] the description, pages \_\_\_\_\_.  
[] the claims, Nos. \_\_\_\_\_.  
[] the drawings, sheets/fig \_\_\_\_\_.

3. [] This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

Novelty (N)                    Claims 1-24 \_\_\_\_\_ YES  
                                    Claims \_\_\_\_\_ NO

Inventive Step (IS)            Claims 4-9, 12, 15 \_\_\_\_\_ YES  
                                    Claims 1-3, 10, 11, 13, 14, 16-24 \_\_\_\_\_ NO

Industrial Applicability (IA)    Claims 1-24 \_\_\_\_\_ YES  
                                    Claims \_\_\_\_\_ NO

**2. CITATIONS AND EXPLANATIONS**

1. The problem of the present application are luciferases having a lower  $K_m$  for the substrate ATP than known wildtype or mutant luciferases.

The prior art does not refer to said problem but provides mutant luciferases such as having greater heat stability or which produce light of different wavelength.

The problem of the present application is solved by the provision of specific mutants of *Photinus pyralis* luciferase exhibiting instead of a glutamate at position 270 either a lysine, an arginine, a glutamine, alanine, or additionally a double mutant being more heat stable (page 15).

Claims 4-9, 12 and 15 disclose said solution. The rest of the claims are more general and do not provide a solution to the given problem, since no alternative amino acid of the essential position 270 or 272 is identified.

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Therefore said claims are objected to under Article 33  
(3) PCT.

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. Claims 1-3 and 11 are not defined by positive features, however, disclose a negative feature such as "an amino acid other than glutamate" and thus are objected to under Art. 6 PCT (see also Guidelines CIII 4.12). In order to properly define said claims, the suitable amino acids should be disclosed into said claims.
  
2. The wording "analog" is not defined and thus unlimited. Therefore Claim 6 is not allowable under Article 6 PCT.